

**FOLLOW-UP ACTIONS BY THE UNITED STATES  
ON THE COMMITMENTS FROM THE PLAN OF ACTION OF MEXICO**

November 2008 – July 2010

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to the Organization of American States**

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## **Introduction**

In the period since the Second Meeting of Ministers and High Authorities on Science and Technology in 2008, the United States has renewed its commitment to science, technology, and innovation, both domestically and in our international cooperation and assistance. We recognize that it is critical to integrate science, technology, engineering and innovation in order to achieve success on a wide range of issues, including global food security and climate change, which have become major Presidential initiatives under the Obama Administration.

In a speech to the National Academy of Sciences in April 2009, President Obama emphasized that “science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before...Science, technology and innovation proceed more rapidly and more cost-effectively when insights, costs and risks are shared; and so many of the challenges that science and technology will help us meet are global in character”.

This report describes some of the most important initiatives undertaken by U.S. government agencies between November 2008 and July 2010, in each of the three priority areas identified by the Plan of Action of Mexico.

## **1. Science, Technology, Engineering, and Innovation and Public Policies for Integral Development**

Over the past two years, the United States has worked to improve math and science education and increase gender equity and equality, both domestically and in the Hemisphere; to promote training in science, technology, engineering, and innovation; to promote and strengthen doctoral and post-doctoral scholarship programs containing a component for internships in other countries; and to strengthen cooperation mechanisms that encourage applied research and networking.

The National Science Foundation (NSF) and the Department of Energy (DOE) jointly support the Pan-American Advanced Studies Institutes (PASI) Program. PASIs aim to disseminate advanced scientific and engineering knowledge and stimulate training and cooperation among researchers of the Americas in the mathematical, physical, and biological sciences, the geosciences, the computer and information sciences, and the engineering fields. The Institutes range in length from ten days to one month, involving lectures, demonstrations, research seminars, and discussions. They are aimed at the post-doctoral level, but may include advanced graduate students at the Masters or Ph.D. level, as well as relevant junior scientists and engineers. PASIs typically involve eight to 12 lecturers and 25 to 40 students/participants from different countries in the Americas. Organizers publically post results of concluded PASI meetings on a web page, including lecture notes and instructional materials, links to publications, seminars, and collaborative research arising from the PASI. Over half of the PASIs in the last three years have given rise to joint publications, and more are in process. Contacts made at a

PASI often result in international exchanges of researchers and joint research projects between the U.S. and Western Hemisphere partners.

NSF also supports the International Research Fellowship Program (IRFP), which seeks to introduce scientists and engineers in the early stages of their careers to international collaborative research opportunities. These awards are available in any field of science and engineering research and education supported by NSF. IRFP fellows are U.S. citizens or permanent residents with a Ph.D. who propose collaboration with a foreign host to conduct scientific and engineering research at institutions of higher education, industrial research institutions, government research institutes, laboratories, centers, nonprofit research organizations, and centers of excellence located outside the U.S. Support may be requested for residence abroad for nine to 24 months. Between 2008 and 2010, 17 postdoc fellowships were awarded for the Americas region (Canada, Argentina, Bolivia, Brazil, Chile, Mexico, Panama, and Peru). IRFP fellows typically return to research positions in the U.S., possessing foreign contacts that facilitate further international collaborations throughout their professional careers.

A new global Clean Energy Education and Empowerment (C-3E) Women's Initiative, led by U.S. Under Secretary of Energy Kristina M. Johnson, aims to inspire women to pursue studies that will enable them to participate in the clean energy revolution. Launched at the Clean Energy Ministerial in July 2010, the objective of the initiative is to encourage women to enter the clean energy field and lend their innovative power to create the technologies of the future, leveraging the power of participating women as role models. The core of the C-3E initiative will be university talks offered around the world by women leading in the fields of science, technology, engineering, and mathematics. By joining this initiative, senior officials in participating governments agree to lead one or a series of outreach events, reaching a total of 500 students or more each year. Participating governments also agree to look for ways to support women seeking advanced degrees in clean energy disciplines (e.g., with scholarship funds).

The U.S. Department of Education's Fund for the Improvement of Postsecondary Education (FIPSE) supports two international programs that focus on countries in the Western Hemisphere:

1. The Program for North American Mobility in Higher Education is a grant competition run cooperatively by the governments of the United States, Canada, and Mexico. The program promotes a student-centered, North American dimension to education and training in a wide range of academic and professional disciplines through consortia consisting of at least two academic institutions from each country. The Program's four-year grants foster student exchange within the context of multilateral curricular development. Recent projects related to science, technology, engineering, and mathematics (STEM) include Sustainable Development for Rural Communities (fiscal year 2008), the North American Engineering Innovation and Training Program (fiscal year 2007), and the North American Nursing Education Experience (fiscal year 2007).
2. The U.S.-Brazil Higher Education Consortia Program's four-year grants foster university partnerships through the exchange of undergraduate and graduate students, faculty, and

staff within the context of bilateral curricular development. Students benefit from having an international curriculum and cultural dimension added to their studies through a combination of bilateral curricular innovation and study abroad. STEM-related projects funded in fiscal year 2009 include:

- Sustainability Challenges and Attractiveness of Investments in Bio-Fuel Production
- Comparative Environmental Issues - Diverse Study Solutions
- Bioenergy and Biological Systems Engineering: Sustainable Agriculture
- PRIMER Alliance for Environmental Biotechnology and Sustainable Development
- Food and Energy Production: Internationalized Agricultural and Engineering Programs
- Consortium for Promotion of Understanding of Environmental and Public Health Issues

The U.S. Department of Education is also supporting a number of successful initiatives within the United States that respond to the priorities of the Plan of Action of Mexico, as described below.

In elementary and secondary education, the U.S. Department of Education supports Upward Bound Math-Science, a program is designed to help secondary school students recognize and develop their potential to excel in math and science and to encourage them to pursue postsecondary degrees in these areas.

In addition, the American Recovery and Reinvestment Act of 2009<sup>10</sup> (ARRA) included the \$4.35 billion Race to the Top program, the largest competitive education grant program in U.S. history. It is designed to provide incentives to U.S. states to implement large-scale, system-changing reforms that result in improved student achievement, narrowed achievement gaps, and increased graduation and college enrollment rates. States' applications for Race to the Top funds must address four core education reform areas: enhancing standards and assessments, improving the collection and use of data, increasing teacher effectiveness and achieving equity in teacher distribution, and turning around struggling schools. Applicants also receive competitive preference for creating high-quality plans to offer rigorous courses in science, technology, engineering, and mathematics (STEM); work with STEM-capable community partners; and prepare more students for advanced study and careers in STEM, including by addressing any barriers to these careers for underrepresented groups such as women and girls.

The Department's Mathematics and Science Partnerships program is designed to improve the content knowledge of teachers and the performance of students in the areas of mathematics and science. The program encourages states, institutions of higher education (IHEs), local education agencies (LEAs), and elementary and secondary schools to participate in programs that improve math and science teacher education; bring math and science teachers together with scientists, mathematicians, and engineers to improve their teaching skills; and provide summer institutes and ongoing professional development for teachers to improve their knowledge and teaching skills.

The Department also supports a number of higher education programs in the United States. It is working to help eligible institutions of higher education to enhance and expand their capacity to serve Hispanic and low-income students by providing funds to improve and strengthen their academic quality, institutional stability, management, and fiscal capabilities. In addition, 18 Historically Black Colleges and Universities (HBCUs) will receive funding to improve master's level education opportunities in mathematics, engineering, physical or natural sciences, computer science, information technology, nursing, allied health or other scientific disciplines in which African-American students are underrepresented. Five Predominantly Black Institutions (PBIs) are eligible to receive funding to improve graduate education opportunities at the master's level in mathematics, engineering, physical or natural sciences, computer science, information technology, nursing, allied health or other scientific disciplines where African-American students are underrepresented. Finally, the Minority Science and Engineering Improvement Program (MSEIP) supports efforts to improve and expand the scientific and technological capacity of the United States, and to increase the number of minorities, particularly women and girls, that are prepared to enter STEM fields. Activities supported by MSEIP include tutoring, faculty development, and college curriculum development in STEM areas.

## **2. Science, Technology, Engineering, and Innovation as Tools for Sustainable Management of Natural Resources**

The United States works domestically and in cooperation with other countries in the Hemisphere to promote the sustainable use of natural resources, including the application of ecosystem-based management systems, the increased use of renewable energy, and improvements in food quality and food security. To this end, the U.S. supports applied research, innovation, technical assistance, the development and sharing of information and tools, and education, training, and scientific exchange.

### ***Agriculture and Food Research***

The U.S. Agency for International Development (USAID) provides support for several Collaborative Research Support Programs (CRSPs), including the Sustainable Agriculture and Natural Resource Management (SANREM) CRSP. The goal of the SANREM CRSP Long Term Research Award program is to implement multidisciplinary and multi-institutional research that mobilizes science and technology, fosters innovation and improvement in the social, economic, and environmental sustainability of agriculture and natural resource management, and leads to improved livelihoods and expanded trade opportunities and capacities for stakeholders. Two long term research activities will be funded through 2014 for research in conservation agriculture production systems (CAPS). In the Andes, Jeffrey Alwang of Virginia Tech, together with Bolivian and Ecuadorian partners, will use research in soil sciences, cropping systems, plant pathology, and economic and social sciences to design, evaluate, and disseminate conservation agricultural technologies for the region, with a focus on potatoes. In Haiti, a project led by James McKenna of Virginia Tech will assess the adaptability of existing farm and livelihood practices for transformation into CAPS, work to improve crop and livestock production through development of CAPS, and seek to increase the capacity of small-scale farmers to adapt and

improve CAPS. These objectives will be achieved through a collaborative effort of Haiti's Ministry of Agriculture and the State University of Haiti's Faculty of Agronomy and Veterinary Medicine (FAMV) with non-governmental organizations Zanmi Agrikol and Caritas/Hinche.

The U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) provides support to American colleges and universities to strengthen programs in agricultural research, extension and education. While the focus of NIFA's investments is on addressing issues in the U.S., many of the supported programs extend well beyond U.S. borders. For example, with regard to Brazil, NIFA is providing support for the following activities:

- A project at Texas Tech University titled, "Economic research, education and outreach in the U.S. and Brazilian cotton industries" is supporting collaborative efforts with the University of Campina Grande and EMBRAPA to develop research partnerships, and to foster student and faculty exchanges. The project is also enabling scientists to include a Brazilian component in the World Fiber and Textile model which will assist policy makers in making production and trade decisions.
- An international education and training project at the University of Kentucky, focused on food, fiber and energy production, supports bidirectional research experiences for faculty and students in the U.S. and at Brazil's Federal University at Vicosa.
- A number of U.S. universities and research institutes are learning from Brazilian case studies and samples. The trade analysis and production modeling done by Iowa State's Food and Agriculture Policy Research Institute includes models that are grounded in Brazilian land policies. Research on livestock diseases at Colorado State University uses animal disease samples from Brazil. North Carolina State University's work on biodiversity in savanna-forest boundaries focuses on Brazilian examples.
- The University of Florida is studying the impact of plant diseases on the U.S. and Brazilian citrus markets. The University of Florida also provided training in post-harvest handling of perishable fruits and vegetables to both U.S. and Brazilian growers and extension workers; the project involved collaboration with EMBRAPA and the EMATER Federal District extension agency in Brasilia.

In addition, USDA's Foreign Agricultural Service (FAS) supports scientific exchange programs such as the Norman E. Borlaug International Agricultural Science and Technology Fellowship and the Cochran Fellowship Program. The Borlaug program strengthens sustainable agricultural practices by providing scientific training and collaborative research opportunities to visiting researchers, policymakers, and university faculty from developing countries. A total of 12 Borlaug Fellows from the Western Hemisphere have completed their programs in FY 2009 and 2010. The Cochran Fellowship program provides U.S.-based agricultural training opportunities for senior and mid-level specialists and administrators from public and private sectors; these are professionals concerned with agricultural trade, agribusiness development, management, policy, and marketing. Current scientific and technological developments are integrated into Cochran

Fellowship trainings. From FY2009 through early August 2010, 112 Cochran Fellows from the Western Hemisphere had received training in the United States.

FAS also collaborates with the Inter-American Institute for Collaboration on Agriculture (IICA) on a variety of projects and programs. These include technical cooperation services, policy dialogues, trainings, research, meetings, and information exchange in the following areas: advancing agriculture biotechnology; furthering hemispheric food security; adapting to and mitigating climate change and promoting a sustainable environment; strengthening agricultural health and food safety systems; trade integration and capacity-building; and agro-energy and bio-fuels development.

USDA leads US participation in the Global Research Alliance on Agricultural Greenhouse Gases (GRA), which was launched in December 2009 on the margins of the UN climate change conference in Copenhagen. GRA seeks to find ways to reduce agricultural greenhouse gas emissions and increase soil carbon sequestration thereby helping to build the adaptive capacity of agricultural systems to meet the increasing demand for food in a sustainable manner. The Alliance also aims to improve the understanding, measurement and estimation of agricultural emissions, and to improve farmers' access to agricultural mitigation technologies and best practice. GRA will facilitate the sharing of technologies, best practices, and research results through a global network of agriculture researchers, and also contribute to capacity building of scientists in developing member countries. Many countries in the Western Hemisphere have joined, including Chile, Colombia, Peru, Uruguay, Mexico, Argentina and Canada. Brazil is an observer. The US leads a working group on crops, and there are also working groups on livestock and paddy rice. Member countries will nominate scientists to populate these working groups. During this first year, member countries are reviewing relevant domestic research and technology development and extension efforts. There is also a working group that has been established to draft a GRA charter.

### ***Ecosystems and Wildlife***

The U.S. Department of the Interior (DOI) has worked to build capacity in Central America to conduct improved Non-Detriment Findings under the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES). The Convention requires that the CITES Scientific Authority of a country granting permits for trade in a particular species make a finding that such trade would not be a detriment to the survival of the species. The capacity building effort has drawn on expertise from the U.S. Fish and Wildlife Service (USFWS) and NOAA's National Marine Fisheries Service.

The Western Hemisphere Migratory Species Initiative (WHMSI) seeks to assist countries in fulfilling their commitments to the conservation of migratory species, by strengthening cooperation and communication among States, international initiatives and civil society, and by expanding constituencies, awareness and political support. USFWS provides full financial support for the bi-annual WHMSI meetings, as well as communication and administrative support for the WHMSI Interim Steering Committee. This Committee, chaired by the USFWS-DIC Chief, leads agenda development for the meetings, training proposal reviews, and other



WHMSI actions. WHMSI strives to provide added value to existing conservation efforts, applying the best available information, including indigenous and local knowledge, and with respect for cultures and values throughout the hemisphere, to address biological, socio-cultural, economic, legal and administrative aspects among others, in its endeavor to mitigate the main threats to migratory species and their habitats. WHMSI provides a unique Hemisphere-wide opportunity for wildlife management agency representatives to meet and discuss key issues of mutual interest related to the conservation of migratory species.

The U.S. National Oceanic and Atmospheric Administration (NOAA) is involved with a project on the Integrated Assessment and Management of the Gulf of Mexico Large Marine Ecosystem (GoMLME). This ecosystem, shared by Cuba, Mexico and the United States, is one of the most productive marine ecosystems in the world, and an important global reservoir of biodiversity. However, this high productivity is at risk due to excessive fishing, destruction of critical coastal and marine habitats, poorly planned growth in the Gulf's coastal and urban areas, and nutrient enrichment resulting in one of the largest hypoxic zones in the world. The GoMLME Project, which is partially funded by the Global Environment Facility, aims to respond to these threats through an ecosystem-based management framework, allowing the countries of the Gulf to strengthen the Gulf's living resources, and address land-based and marine pollution, including the reduction of nutrient loads that contribute to hypoxic zones in the region. The Project is working to remove identified constraints and barriers, develop common mechanisms and tools, and promote reforms and investments, to set the bases for application of an ecosystem-based management (EBM) approach in the management of the GoMLME. This will be complemented by capacity building activities and pilot projects in three critical aspects of the EBM approach: productivity, conservation and adaptive management, and cross-sectoral engagement, including solid monitoring and evaluation frameworks for each component. Activities began in June 2009, and include updating the Transboundary Diagnostic Analysis, formulating a Strategic Action Program and associated National Action Programs, and implementing three demonstration projects to restore depleted shrimp stocks, jointly assess and monitor coastal conditions, and conserve natural habitats such as wetlands, mangroves, sea grass beds and sand dunes.

### ***Clean and Renewable Energy***

The U.S.-Canada Clean Energy Dialogue (CED) was established by President Obama and Prime Minister Harper in February 2009 to encourage the development of clean energy technologies to reduce greenhouse gases and combat climate change in both countries. The CED is charged with: expanding clean energy research and development; developing and deploying clean energy technology; and building a more efficient electric grid based on clean and renewable generation. Three bilateral Working Groups are implementing projects identified for joint cooperation under a CED Action Plan in the areas of carbon capture and storage (CCS), electricity grid/smart grid, and clean energy research and development in advanced biofuels, clean engines, and energy efficiency. DOE and Secretary Steven Chu lead the CED for the United States, with participation by the U.S. Department of State and the U.S. Environmental Protection Agency. Canada's effort is led by Environment Canada and Minister Jim Prentice, with the participation of Natural Resources Canada (NRCan). DOE co-chairs the CCS and Electricity Grid Working Groups with NRCan, and the Clean Energy R&D Working Group with Environment Canada.

In April 2009, as part of President Obama's first trip to Mexico (accompanied by U.S. Secretary of Energy Steven Chu), President Obama and President Calderón announced plans to strengthen and deepen bilateral cooperation by establishing the U.S.-Mexico Bilateral Framework on Clean Energy and Climate Change. The Bilateral Framework was envisioned as a mechanism for political and technical cooperation and information exchange, and as a means of facilitating common efforts to develop green economies and implement clean energy technologies. As announced, the Framework focuses on: renewable energy, energy efficiency, adaptation, market mechanisms, forestry and land use, green jobs, low carbon energy technology development and capacity building.

To strengthen Inter-American collaboration on energy and climate change, in April 2009 President Obama invited all countries of the Western Hemisphere to join in an Energy and Climate Partnership of the Americas (ECPA). The goal of ECPA is to foster partnerships across the Americas to achieve low carbon economic growth and development. Through ECPA, governments in the Western Hemisphere may volunteer to lead multi-country or bilateral initiatives on renewable energy, energy efficiency, energy poverty, infrastructure, cleaner and more efficient use of fossil fuels, sustainable forests and land use, and climate change adaptation.

In April 2010, U.S. Secretary of Energy Steven Chu hosted Western Hemisphere energy ministers in Washington, D.C. for the two-day Energy and Climate Ministerial of the Americas to highlight progress, announce new partnerships, and facilitate the development of new initiatives among governments, institutions, private industry, and civil society. Energy Ministers and senior delegates from 32 nations, and some 450 representatives from government, industry and civil society gave their support to the ECPA. At both events, participants noted the urgent need to advance a clean energy agenda for the Western Hemisphere.

New and ongoing ECPA initiatives supported by the United States include the following:

- Low Carbon Communities of the Americas: The Department of Energy launched the Low Carbon Communities of the Americas (LCCA) program at the 2009 Energy and Climate Symposium of the Americas in Lima, Peru. DOE is funding several proposals from the nations of the Americas for technical assistance and collaborative work with DOE and its national laboratories on sustainable energy market transformation projects. A project proposed by the Organization of American States and seven Caribbean countries (St. Lucia, Dominica, Grenada, St. Kitts & Nevis, The Bahamas, Antigua & Barbuda, and St. Vincent and the Grenadines) will build local capacity to conduct energy efficiency audits, deploy energy efficiency technologies, and evaluate assessments of indigenous renewable natural resources. A project proposed by the government of Costa Rica and the Natural Resources Defense Council will create an Energy Efficiency Center in Costa Rica that will train and certify professionals in energy efficiency technology and auditing procedures. DOE is also supporting the Dominica wind project, which will identify small, distributed wind generation technologies and model commercialization strategies.

- Energy Innovation Centers: DOE is providing technical assistance in the creation and development of Regional Clean Energy Centers with facilities throughout the Hemisphere by gathering and transmitting data and best practices, offering technical assistance, and contributing to clean energy technologies research and development. DOE's National Renewable Energy Laboratory (NREL) is supporting Chile in the design and operation of a renewable energy center, which will serve as a clearinghouse of information and analytic tools, and a leading source of expertise on renewable energy technologies and policies for Chile and the region. It will also help research, develop, and promote non-conventional renewable energy projects, and will serve as a source of information for investors and policy makers. With Colombia, DOE is providing technical assistance on a research project to assess the feasibility of pyrolysis of agro-industrial residue biomass as a means of mitigating emissions from biomass used in energy generation. DOE also signed an agreement with the Inter-American Development Bank (IDB), creating an Energy Innovation Center that will allow DOE and IDB to coordinate resources to facilitate regional projects and activities.
- The Clean Energy Exchange Program of the Americas: Supported by the U.S. Trade and Development Agency's (USTDA), this program is bringing nearly 50 Latin American and Caribbean energy officials and project sponsors to the United States in 2010, on a series of six reverse trade missions. Each reverse trade mission will include clean energy project site visits and meetings with U.S. government agencies, U.S. industry, and financial institutions to exchange information on the commercial, technological, regulatory, and financial aspects of clean energy project development.
- Renewable Biomass Energy Project: With State Department funding, USDA is implementing a project to build international cooperation and production capacity for renewable biomass energy. As part of this capacity building project, country-specific technical support—provided through the USDA—will focus on three primary enabling activities for three partner ECPA countries: U.S. study tours, scientific exchanges, and demonstration projects. The objective of this program is to increase production, diversity, and use of biomass used for energy and biofuels, as well as to support and strengthen policy frameworks that encourage production of biomass used for energy.
- ECPA Senior Fellows Program: This capacity building program provides an opportunity to share best practices and expertise in research and development and the design and implementation of programs in support of this Summit of the Americas initiative. A cadre of technical experts and scientists from the academic sector is available to countries in the Western Hemisphere as consultants or for speaking engagements in their areas of expertise.

In May 2010, during the State visit of Mexican President Felipe Calderón to Washington, and under the auspices of the overarching Bilateral Framework announced the previous year, the Presidents announced the creation of a Cross Border Electricity Task Force to promote regional renewable energy markets between the United States and Mexico. The Task Force has been

mandated to review opportunities and obstacles to cross border trade in renewable energy, advancing options on standards, electricity transmission, grid connections, and other policy measures that create market incentives for investment and trade in renewable energy technologies. Presidents Obama and Calderón also committed to increasing grid reliability and resiliency, including collaboration on smart grid standards and technology.

In July 2010, in Washington, D.C., ministers from 24 governments participated in the first-ever Clean Energy Ministerial, launching 11 initiatives to accelerate the global transition to clean energy. Successful execution of these initiatives could avoid the need to build more than 500 mid-sized power plants in the next 20 years, promote the rapid deployment of electric vehicles, support the growing global market for renewable energy and carbon capture technologies, bring solar lanterns or other improved energy services to more than 10 million people without access to grid electricity by 2015, and help encourage women to pursue careers in clean energy. Participating governments included several OAS member states: Brazil, Canada, Mexico, and the United States.

At the Clean Energy Ministerial, governments launched a Global Energy Efficiency Challenge to help cut energy waste around the world. These programs will help bring super-efficient consumer appliances to growing global markets, target energy savings in the buildings sector, improve the energy efficiency of industrial processes, and encourage deployment of millions of electric vehicles.

- The Super-efficient Equipment and Appliance Deployment (SEAD) Initiative aims to transform the global market for energy-using equipment and appliances, such as televisions and lighting. SEAD will help governments overcome market barriers to capture a significant portion of global appliance efficiency energy savings. Participating OAS member states include the United States, Canada, and Mexico.
- The Global Superior Energy Performance (GSEP) Partnership will help large buildings and industrial facilities – which account for almost 60 percent of global energy use – measure and reduce their energy consumption and greenhouse gas emissions over time, incentivizing positive change with an internationally-recognized certification program. GSEP participants will share tools, trainings and best practices for tracking and accelerating energy performance improvements, both within their sector and across industry sectors. Participants include three OAS member states –the U.S., Canada, and Mexico– as well as eight companies representing over \$600 billion in annual sales.
- The International Smart Grid Action Network (ISGAN) will help accelerate the development and deployment of smart electricity grids around the world through high-level government dialogue, sharing best-practices, technical assistance, peer review and project coordination, where appropriate. Smart grid technologies will promote the growth of renewable energy, help consumers and businesses to better measure and manage their energy use, improve the reliability of the electrical system, and speed the introduction of fuel-saving electric vehicles. Participating OAS member states include the United States, Canada, and Mexico.

- The United States and Mexico are also participating in an initiative on Clean Energy Solutions Centers, which will help governments drive transformational low-carbon technologies by creating a virtual network to identify and share best-practice policies, provide the market with information on emerging policy trends, and identify opportunities for policy coordination across countries. The Solutions Centers will serve as a clearinghouse for policy information, supporting a network of at least 100 policy and technology experts with an initial focus on energy efficiency.

The United States also provides bilateral assistance on clean energy through USAID. In Mexico, USAID has been supporting efforts to promote renewable energy and develop supporting policies and regulations. USAID also helped to document and share lessons learned from wind energy projects, renewable energy legislation, and regulatory incentives in the U.S. and Mexico. All of the reports and presentations are available on the AMDEE web site.

In Brazil, USAID and its partners are working to design and implement models and methodologies to support clean and renewable energy technology and energy efficiency applications, including the development of public policies and the regulatory framework to promote sustainable energy management and mitigate climate change. Activities promote environmental protection and also create new opportunities for micro-enterprise and increase local incomes. As a result of program activities, it is expected that 15,000 people will be trained on renewable energy and energy efficiency; 80 communities will adopt renewable energy or energy efficiency technologies; 200,000 solar water heaters will be installed in homes built through the Government of Brazil's low-income housing program; and at least 100 farms will produce biofuels and biofertilizers from biodigestors. New public-private partnerships will facilitate scale-up and sustainability of these efforts.

In August 2009, the OAS completed a project funded by the U.S. Department of State to diversify the energy production mix of countries in the Western Hemisphere through sustainable bio-energy programs. The U.S.-Brazil Biofuels Bilateral Agreement was motivated by the fact that Brazil and the United States had considerable expertise to share with other countries of the region to build successful programs and projects in the bio-energy arena. The U.S. State Department provided \$2.49 million for the OAS to undertake activities in Haiti, the Dominican Republic, St. Kitts & Nevis, El Salvador, Honduras, Guatemala, and Jamaica. These activities included technical assistance, policy and regulatory strengthening and reform, capacity building, public outreach and feasibility studies.<sup>1</sup>

### ***Environmental Monitoring and Data Dissemination***

The National Aeronautics and Space Administration (NASA) and USAID support SERVIR, a Regional Visualization and Monitoring System that integrates satellite and other geospatial data for improved scientific knowledge and decision making by managers, researchers, students, and the general public. SERVIR provides valid scientific, actionable information for decision-making

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<sup>1</sup> The project reports and feasibility studies are available at [http://sepa-americas.net/proyectos\\_detalle.php?ID=15](http://sepa-americas.net/proyectos_detalle.php?ID=15)

to promote adaptation to climate change and sustainable development. The first SERVIR regional operational facility—covering Central America, Mexico, and the Dominican Republic—was established in 2005 in partnership with the Centro del Agua del Trópico Húmedo para América Latina y El Caribe (CATHALAC). SERVIR provides daily monitoring of the region’s land, sea, and atmosphere, serving as a regional observatory of environmental change. National and regional datasets to document climate baselines and vegetation cover have been compiled in spatial formats and made available via SERVIR.<sup>2</sup> In 2008, USAID, NASA, the Institute for the Application of Geospatial Technology, the University of Colorado, and CATHALAC developed the Climate Mapper tool for SERVIR, which allows a broad user community to assess climate change projections for the 2030s and 2050s against three-dimensional visualizations of landscape. SERVIR has also supported capacity-building activities for national government representatives, universities, and non-governmental organizations (NGOs) on how to assess vulnerability and post-event disaster impacts. Also, in 2008, NASA, USAID, and the Regional Center for Mapping Resources for Development (RCMRD) in Nairobi, Kenya initiated the SERVIR Africa node at RCMRD to foster sustainable development in eastern Africa. CATHALAC and RCMRD have worked closely to foster cross-node connectivity between the Central American/Caribbean and East African regions.

NSF provided support in 2009 to develop a publically accessible geoportal, Climate 1-Stop, to search, view, download, model, and monitor existing climate and environmental data and projects worldwide. The geoportal concept grew from the SERVIR initiative and is a collaboration between university and community college researchers, educators, and students, the NASA Marshall Space Flight Center, NSF, USAID, and CATHALAC. The geoportal enables climate and environmental experts to stay informed and share information with climate and environmental researchers, decision-makers, and other interested governments and organizations. Additionally, the project activities promote and develop multi-disciplinary, multi-national partnerships through broad participation in the resulting geoportal.

Another recent NSF-USAID collaboration was the jointly supported international workshop “Adapting to a World without Glaciers”, held in Lima and Huaraz, Peru in July 2009. The workshop objectives were to (a) facilitate discussion among scientists, practitioners, and policy makers about climate change vulnerabilities and risks, (b) catalyze thinking for innovative approaches to changing environmental and climatic conditions, and (c) identify priority research, collaboration, and action needs. The Mountain Institute (TMI) and International Resources Group (IRG) developed and convened the workshop and it was hosted by Peru’s National Science Council (CONCYTEC) and the Ministry of the Environment. The workshop included presentations, discussion sessions and working groups with participants representing different disciplines, institutions, projects, and government agencies. Many of these key recommendations were then integrated into TMI’s new USAID-funded climate change project “Building Climate Change Awareness and Resilience in the Ancash and Piura Watersheds of Northern Peru”. NSF will also support a collaborative research project to study consequences of glacial recession in the tropical highlands of Peru.

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<sup>2</sup> [www.servir.net](http://www.servir.net)

NOAA maintains GEONETCast Americas, the Western Hemisphere contribution to a global environmental data dissemination system in support of the Global Earth Observation System of Systems (GEOSS). The GEONETCast Americas service uses the commercial Intelsat-9 (IS-9) satellite to broadcast environmental and other observation data to an area covering most of North, Central, and South America. A three-year project is seeking to help fill an acute need for a reliable, low-cost system providing access to Earth Observation Systems (EOS) data and information, and a concurrent need to increase the capability of decision makers in the Americas and Caribbean to use this information to make better-informed and timely decisions. The nations of Central America and the Caribbean are especially vulnerable to extreme environmental events, and timely access to decision-support products in areas like public health, energy, agriculture, weather, water, climate, natural disasters and ecosystems can facilitate improved decision-making, especially in regions with poor connectivity by telephone or internet. GEONETCast Americas provides improved, low-cost and reliable access to data and products in a timely manner, and in formats readily accessible to users. This project seeks to leverage GEONETCast Americas to strengthen the application of EOS in the Americas and the Caribbean through the installation of GEONETCast ground reception stations and a regular schedule of trainings in the use of the stations and the application of the data and products received via the GEONETCast Americas broadcast.

The GEONETCast Americas project will deliver and install at least 50 receiving stations. Each country in the Americas and Caribbean will have at least one station. Users of the station will receive training on the proper operation and maintenance of the stations, including how to request specific data or products to be disseminated through the system and, if they choose, to disseminate their own data and products through the system. At least 180 people will be trained in the use of EOS data and products and how to apply the information to the decision making process.

GEONETCast Americas is working with eleven partner organizations from nine countries that have identified 35 sites where the installation of GEONETCast Americas receiving stations can bring immediate positive impacts. Ten additional organizations from eight countries have expressed interest but have not yet developed a statement of need confirming a station location. The GEONETCast Americas system also ties into the global GEONETCast system and sub-regional systems and production centers like the Brazilian space research institute (INPE), the Argentine space agency (CONAE), NOAA, SERVIR, and national hydro-meteorological services.

### ***Hazards and Emergency Response***

The U.S. Geological Survey (USGS), part of the U.S. Department of the Interior, conducted a one week workshop in Nassau, Bahamas in June 2010 entitled "Satellite and RADAR Imagery Applications for Hazards Professionals", focusing on remote sensing imagery for hazards. This was part of an innovative initiative involving the U.S. Embassy, USGS, U.S. Department of Defense - United States Northern Command (USNORTHCOM), the Bahamian National Emergency Management Agency (NEMA) and the Bahamian National Geographic Information

Systems (BNGIS) Center. The objective was to initiate the first-ever disaster preparedness project with the Government of the Bahamas to provide training to Bahamian first responders. It aimed to strengthen the capability to reduce the risks and impacts of natural disasters, in particular flood hazards, and to provide timely and effective emergency response.

USGS also worked through the OFDA-funded Earthquake Disaster Assistance Team to respond to several earthquakes in the Western Hemisphere this year. After the January 2010 earthquake in Haiti, USGS provided accelerometers to evaluate strong motion movement, shake maps for intensity with resulting maps applied towards assisting with building reconstruction, fault reconnaissance mapping for the Enriquillo Fault, and the evaluation of uplifted corals to better understand the earthquake history. Landslide reconnaissance also helped to identify areas of road blockages as well as sites of potential future slides.

USGS responded in a similar fashion for the Chile earthquake. USGS collaboration with SERNAGEOMIN (the Chilean Geological Survey) during the emergency benefitted from a sound working relationship developed over the past year and half through the USGS' Volcano Disaster Assistance Program (VDAP). VDAP provided advice and assistance to SERNAGEOMIN as they implemented a new real-time national volcano monitoring system and hazard assessment program.

After the Mexicalli earthquake along the U.S.-Mexico border, lightweight portable sensors were deployed to the region in concert with collaborators at CICESE, a Mexican seismic counterpart in Baja California Sur. Imagery from the International Charter provided critical scientific data which is helping both countries try to mitigate consequences from any future events.

NSF also responded to the three earthquakes, through their Rapid Response Research (RAPID) funding mechanism. A Dear Colleague Letter (DCL) went out to the research community following the Haiti earthquake to support research efforts aimed at obtaining important and timely data about the Haiti event and assist in reconstruction efforts that should offer important knowledge about risk management and remediation. The DCL called for proposals to address far-reaching and multiple research areas, including structural engineering, geotechnical systems performance, critical infrastructure systems effects, and emergency response and relief. Additionally, an interagency workshop entitled "Rebuilding for Resilience: How Science and Engineering Can Inform Haiti's Reconstruction," was held at the University of Miami in March with support from NASA, NSF, and USGS. RAPID proposals were also submitted for the Chile and Mexico earthquakes. An important achievement with Chile was that Chilean, French, German and US scientists and engineers came to agreement on the sharing of data stemming from different instruments that each side brought on site. In total, over 40 RAPID awards were made for the three earthquakes. Furthermore, NSF will convene two international workshops, organized by the Earthquake Engineering Research Institute (EERI), to identify research opportunities and priorities following the Haiti and Chile earthquakes. The workshops will take place in August and September, 2010; participants will include U.S., Chilean, and Haitian researchers along with NSF, the National Institute of Standards and Technology, U.S. Army Corps of Engineers, Federal Emergency Management Agency, USGS, and USAID.



NSF and USAID will jointly support a workshop in October 2010 in San José, Costa Rica, to promote international scientific collaboration for seismological research and hazard mitigation between the Middle America region and the U.S. The meeting will focus on: (a) scientific issues that derive from the unique tectonic environment of the region, (b) strengthening the regional infrastructure and academic community for seismological research, and (c) generating products with immediate regional societal benefits. Participants will include researchers from universities and geophysical observatory networks, students, national policy experts, and emergency planners from the U.S., Central America, Mexico, and the Caribbean. The workshop will be organized by Incorporated Research Institutions for Seismology (IRIS) in collaboration with the Universidad Nacional de Costa Rica, the University of the West Indies in Trinidad and Tobago, and the Universidad Nacional Autónoma in Mexico. Workshop outcomes will include new insights regarding the development of hazard mitigation systems, seismographic networks, and data sharing mechanisms in the region, and well as new interdisciplinary projects of interest to NSF, USAID, and the participating countries.

Finally, NOAA supports Science of Oil Spills (SOS) workshops that build skills in analyzing complex oil spill events and making risk-based decisions that maximize long term environmental benefit. They are designed for new and mid-level spill responders. Representatives from the governments of Panama, Bahamas, and Canada have participated in SOS courses over the past two years.

### **3. Science, Technology, Engineering, and Innovation as Tools for Increasing Productivity**

The United States supports and participates in a number of programs in the Hemisphere to strengthen the Inter-American Metrology System (SIM), to improve supply-chain management, and to develop national quality infrastructures in areas such as metrology, standardization, and quality certification.

In Central America, USAID supported efforts of the Central American Council for Environment and Development to design national policies and incentives related to cleaner production, energy efficiency, and environmental management systems. This included the approval of technical standards for electric motors, Compact Fluorescent Lamps, air conditioning units, and refrigeration technologies, and capacity building activities regarding implementation.

FAS, meanwhile, works closely with other U.S. Government agencies and international organizations to define and deliver technical capacity building programs to support agricultural development in the Western Hemisphere. These assistance programs promote science-based policy decisions and regulatory systems by helping countries improve their food safety, and plant and animal health systems. In FY 2009-2010, FAS has worked closely with USAID to implement technical capacity building programs for member countries of the Dominican Republic-Central America Free Trade Agreement and the Peru Trade Promotion Agreement. These programs provided technical assistance to enhance sanitary and phytosanitary standards, thereby expanding these opportunities to export agricultural products and increase rural incomes.

## ***Metrology***

The National Institute of Standards and Technology (NIST) in the U.S. is actively engaged in SIM. NIST served as the coordinator of an OAS/FEMCIDI- supported project, completed in May 2010, which was designed to facilitate harmonization of measurements across the region, improve the level of measurement capabilities in each participating country, identify areas for training and capacity building, and raise awareness of the importance of a measurement and standards infrastructure to support innovation and competitiveness.

The commitments of the participating institutions and their respective governments have generated noticeable improvements in local and national support for basic metrology infrastructures. Panama, Costa Rica, Colombia, Paraguay, Peru have invested significantly in their local metrology and standards infrastructure. Argentina, Costa Rica, Brazil, Mexico, Panama, Chile, and Uruguay have gained international recognition of their measurement capabilities and are reaching out to support their neighboring countries. Colombia, Bolivia, Jamaica and Peru are working towards international recognition of their measurement capabilities. Mexico, Canada, Brazil and the U.S. are upgrading existing facilities. Brazil has implemented new Divisions in Dynamics of Fluids, Biometrology, Telecommunications Metrology, and Nanometrology, and has enhanced the scope of its chemical metrology division. Chile's distributed system of metrology has been operating successfully for two years. Mexico, Brazil, the German government, and the OAS have been supporting Bolivia and Peru on developing the basic infrastructure to improve reference standards of gas fluid flow and gas chromatography. Chile and Germany are supporting the development of force metrology capabilities in Peru, Bolivia, Colombia, Ecuador, Paraguay, Uruguay and Panama.

As a result of this project, hundreds of people have been trained in basic and advanced metrology areas. Participating institutions that didn't know each other before the start of these activities have been able to develop strong partnerships. With support from OAS/FEMCIDI, the Brazilian Development Agency, and NIST (U.S.), over 50 students representing 27 OAS Member States attended the SIM Metrology Summer School in Brazil. Training was provided in thermometry, mass and density, electrical metrology, volume/flow, international metrology, legal metrology, chemistry, quality systems, time and frequency, optical metrology, viscosity, acoustics and vibrations, biometrology, nanometrology, ionizing radiation, vocabulary, dimensional metrology and pressure. The Summer School was an excellent opportunity for young metrologists to interact with their colleagues from the region, to learn about areas of metrology where they did not have experience, and to help develop the future leaders of metrology in the hemisphere.

Other activities this project year included:

- An awareness seminar by the Chemical Metrology Working Group for 20 policy makers in Brazil;
- Four legal metrology events for a total of 50 people on: OIML requirements for mass verification (Peru), Legal Metrology on fuel dispensers (Costa Rica), Calibration of volume for oil tankers (Costa Rica), and Fuel Dispensers and Weighing Instruments (for CARIMET);
- An NMI-user's Awareness event and the SIM General Assembly, in Peru;

- An Awareness event held concurrently with the Legal Metrology event in Guyana;
- A technical seminar and awareness event on Natural Gas, for 78 participants in Peru;
- An annual meeting of 40 national metrology leaders, in Lima, in October 2009, to discuss the advances in the region, the results of project activities, and future planning; and
- Workshops and seminars to improve participants' measurement capabilities: SIM Summer School in Brazil, Gas Flow at INDECOPI (Peru); Force measurements at SIC (Colombia); T&F (Argentina); Uncertainty (Mexico) CENAM, Mass and Related Quantities (Peru), Coordinate Metrology (Mexico); Electrical Power and Energy (Mexico); Verification of Weighing Instruments (Guyana); Fuel Dispensers verification (Guyana).

A new project, "Metrology and National Measurement Standards to support Environmental Sustainability and the Enhancement of Human Health, Safety and Prosperity in the Americas", began on May 1, 2010 and will end June 30, 2011. A National Metrology Institute's (NMI) ability to make accurate, reliable and internationally recognized measurements is essential to the protection of the environment, energy security, human health and safety, and the development of the local economy as well as for local, regional and international trade. In addition, an adequate and robust measurement standards infrastructure is necessary for innovation, competitiveness and prosperity. In the Americas, the institutions responsible for these measurements are at varying degrees of development and there are vast differences in proficiency in making accurate measurements and providing measurement services to local customers. This new one-year project supported by OAS/FEMCIDI will focus on capacity building, professional development, public awareness and communications and outreach in critical measurement areas for environmental monitoring, protection and promotion of human health and safety, and facilitating trade and commerce. In addition, important legal metrology issues identified by the participating countries will be addressed. The long-term goal is to develop a sustainable and internationally recognized measurement standards infrastructure in the hemisphere by developing scientific expertise and metrological capabilities in each of the countries specific to their local needs. We will partner countries with similar needs and abilities with other countries having the relevant expertise and experience to address those needs in key measurement areas of importance in the hemisphere; provide a conduit for the less developed SIM countries to participate in the international measurement community; and provide tools to improve countries' abilities to monitor environmental protection efforts, support local industries, develop their economies, and improve healthcare and quality of life.

#### **4. Bilateral Agreements**

The U.S. holds bilateral science and technology agreements with Brazil, Chile, Argentina, and Mexico. It also has agreements that have been signed but are not yet in force with Uruguay and Colombia.

Under the Brazil Science and Technology Agreement (STA), the U.S. and Brazil held a Joint Committee Meeting in Washington on November 20, 2009. Minister Sergio Rezende presided

as head of the Brazilian delegation and co-chair with Dr. John Holdren, who headed the U.S. delegation. The Joint Committee reviewed cooperative activities in Basic Science, Health Science, Earth Observations and Climate Science, Space, Agriculture, and Metrology and Measurement Science. The Joint Committee also saw the signings of three Memoranda of Understanding (MOUs): one for metrology and measurement science, one establishing a “sandwich” program for post-doctoral trainees in the health sciences, and the last in R&D in cellulosic biofuels. Finally, the Joint Committee supported future trilateral cooperation in the health sciences, agricultural research, and remote sensing and climate change.

The U.S. and Chile held a Joint Committee Meeting on June 29-30, 2009. Mr. Andrew Reynolds, the Deputy Science Adviser to the Secretary of State, led the U.S. delegation, and Ms. Vivian Heyl, President of CONICYT, led the Chilean delegation. The Parties held discussions in Astronomy and Basic Science, Energy, Health, Earth Science, Climate Change, Agriculture and Food Safety, and Forensic Science. Unfortunately, numerous activities have slowed down in part due to the earthquake and also in part due to the political transition. Nevertheless, visits and cooperation continue in activities related to biofuels and forensics. Additionally, NSF investments in Chile continue, including the construction of the Atacama Large Millimeter/Submillimeter Array (ALMA), and operation and development of the International Gemini Observatory and the Cerro Tololo Interamerican Observatory (CTIO).

Finally, the U.S. and Argentina are planning to hold a Joint Committee Meeting on September 2-3, 2010 in Buenos Aires.